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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,269	02/25/2004	Chien-Ping Huang	58102-DIV (71987)	5161
21874	7590	02/21/2006	EXAMINER	
EDWARDS & ANGELL, LLP			CAO, PHAT X	
P.O. BOX 55874			ART UNIT	
BOSTON, MA 02205			PAPER NUMBER	
			2814	

DATE MAILED: 02/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.		Applicant(s)	
	10/787,269		HUANG, CHIEN-PING	
	Examiner		Art Unit	
	Phat X. Cao		2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/211,430.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 16-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al (US. 5,736,785) in view of Applicant's admitted prior art.

Regarding claims 16, 20, 29 and 38, Chiang (Figs. 4A-4E) discloses a heat dissipating structure for a semiconductor package having a substrate 104, a chip 102 mounted on the substrate 104 and electrically connected to the substrate 104 via a plurality of conductive wire elements 108, the heat dissipating structure 116 comprising: a flat portion 116; and a plurality of support portions 116f/116c (see Fig. 4C and column 4, lines 38-40 and lines 51-55) formed at edge corners of the flat portion for supporting the flat portion in position above the chip, wherein the support portions 116c are mounted at a predetermined area on the substrate 104 and free of interference with an arrangement of the chip 102 and the conductive wire elements 108 (see Fig. 4C and column 4, lines 51-55), and the support portions 116c are arranged to form a space between two adjacent support portions 116c, the space being sufficiently dimensioned to accommodate the conductive wire elements 108 so as to allow the conductive wire elements 108 to pass through the space to reach an area on the substrate 104 outside coverage of the heat dissipating structure 116 (see Fig. 4C).

Chiang does not disclose a passive component mounted on the substrate 104.

However, Applicant's admitted prior art (Fig. 5) teaches a semiconductor package having a chip 31, and passive components disposed on the substrate 30 (not shown, see Applicant's specification, page 2, lines 11-13). Accordingly, it would have been obvious to form passive components on the substrate of Chiang in order to provide a desired semiconductor package, which has a required layout for the integrated circuit.

Regarding claims 17, 19 and 21, Chiang further discloses that: the conductive elements are bonding wires 108; a plurality of bond fingers (i.e., conductive traces) are formed on the substrate 30 for allowing the bonding wires 108 to be bonded to the bond fingers (column 4, lines 14-16), wherein part of the bond fingers are situated on the substrate 30 at an area outside the coverage of the heat dissipating structure 116, allowing the corresponding bonding wires 108 to pass through the space embraced by adjacent support portions 116c/116f and the flat portion and to reach the outside-coverage bond fingers (i.e., conductive traces) (see Fig. 4C); and the chip 102 and the conductive wire elements 108 are encapsulated by an encapsulant 112 formed on the substrate.

Regarding claims 18, 22, 24, 30, 32, 33, 40 and 41, Chiang further discloses that: the flat portion 116 is elevated above the chip 102 by the support portions 116c and forms a predetermined height difference with respect to the substrate 104, allowing the height difference to be larger than a height of wire loops of the bonding wires 108 (see Fig. 4A); the flat portion 116 has a top surface exposed to outside of the encapsulant

112, and a bottom surface opposite to the top surface, the bottom surface being formed with the support portions 116c; and a peripherally situated recess formed between the adjacent raised portions 116d is formed on the top surface of the flat portion (see Fig. 4E).

Regarding claims 23, 31, and 39, Chiang further discloses that a protrusion 116a is formed on the bottom surface of the flat portion and extends toward the chip 102 (see Figs. 4B and 4E).

Regarding claims 26-28, 35-37 and 43-45, Chiang (Fig. 4A) also discloses that each of the support portions 116c is formed with a contact portion at a position in contact with the substrate 104, the contact portion is a semicircular shape and extends laterally with respect to the substrate 104.

Regarding claims 25, 34, and 42, Chiang (Fig. 4C) also discloses that each of the support portion 116f/116c is formed with a hole 116b for allowing an encapsulating resin used for forming the encapsulant to pass through the hole 116b (column 4, lines 64-67).

Response to Arguments

2. Applicant's arguments regarding the rejections based on the combination of Huang and AAPA and based on double patenting are persuasive. Therefore, these ground of rejections are withdrawn.

Regarding the rejection based on the combination of Chiang and AAPA, Applicant argues that Fig. 5 of AAPA does not teach "the support portions are arranged to form a space between two adjacent support portions, the space being sufficiently dimensioned to accommodate ... the passive components".

This argument is not persuasive because of the following reasons:

First, this argument has no immediately apparent relevance to the issues presented by the rejection since Applicant cannot show nonobviousness by attacking references individually where the rejection is based upon a combination of references. In re Young, 403 F. 2d 754, 757, 159 USPQ 725, 728 (CCPA 1968). The examiner relies on the combined teachings of Chiang and AAPA. AAPA is not relied on for teaching "the support portions are arranged to form a space between two adjacent support portions". Chiang (Fig. 4A) discloses "the support portions are arranged to form a space between two adjacent support portions" (see ground of rejection). AAPA is relied on for showing that it was known to form "the space being sufficiently dimensioned to accommodate ... the passive components" within a heat dissipating structure. The examiner thus regards Applicant's assertions as constituting evidence that Applicant has failed to consider as a whole the prior art teachings disclosed by the combining of the references.

Second, Applicant has also failed to provide the reasons to support that why it would not be obvious to form the passive components within a space formed by a heat dissipating structure of Chiang even though AAPA clearly suggests the forming of the passive components within a space formed by a heat dissipating structure.

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phat X. Cao whose telephone number is 571-272-1703. The examiner can normally be reached on M-F.

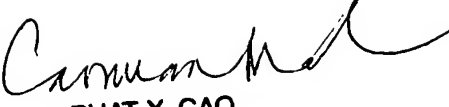
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PC
February 17, 2006


PHAT X. CAO
PRIMARY EXAMINER